



Solution for homework 2

Cleaning the data first

1. Import the data
2. Make sure data is in the same format
 - drop if approx == 999999
 - drop if bonus == 999999
 - drop if ot == 99999
 - drop if oth_money == 99999
3. Make sure data is in the same unit because bonus is an annual data
 - gen mbonus = bonus/12
4. gen monthly average income
 - gen avg_inc = approx+mbonus+ot+oth_money

Answers

1. The model is $avg_inc_i = \beta_1 + \beta_2 * age_i + u_i$
 - Let's avg_inc_i be monthly average income of a person.
 - Let's age_i be age of a person.
2. Create a scatter diagram
 - twoway scatter avg_inc age
3. Yes, since the variation of the error term, \hat{u}_i , increases as age increase. In other words, the variation of the error term is correlated with the independent variable.
4. Run a regression
 - reg avg_inc age
5. Test the hypothesis
 - test age = 0
 - test _cons =0

These are commands for testing a hypothesis of $H_0 : \beta_2 = 0$ and $H_0 : \beta_1 = 0$, respectively. The results are reported as F-test. I did not teach this because I want you to do the hypothesis test manually in this homework

6.
 - Intercept coefficient: The $\hat{\beta}_1 = 2732$. This means that on average when age is equal to 0, the monthly average income of a person will equal to 2732 Baht, ceteris paribus.
 - Slope coefficient: The $\hat{\beta}_2 = 302$. This means that on average when age increases by 1 year, the monthly average income of a person increases by 302 Baht, ceteris paribus.
 - R^2 : 6.76 percent of the variation in monthly average income can be explained by variation in age.

Note that sometimes, like in this case, the intercept term is not economically meaningful because having any income when age is equal to 0 is not practical. But most of the time we do not omit the intercept term because it could alter the slope coefficient which represents the relationship of age toward monthly average income. So, we just ignore the intercept term and only focus on/report the slope coefficient because we want to know the relationship of age on monthly average income.

7.
 - Yes. Since wage reflects the value/productivity of a person and, as the age increase, a person can develop more human capital skill such as knowledge. Therefore, on average older people can demand more wage.
 - Although age is statistically significant affecting monthly average income at 5 percent level of significance, it is not a crucial factor. Because the magnitude of it is very low. On average, one year increase in age only results in 302 Baht increase in income, ceteris paribus. Also, the R^2 is only 6.76 percent. There are still a lot of unexplained variation.