Problem 1

Using wagepan2.dta from the course website, we will begin our study of panel econometrics by evaluating changes in industries on wage outcomes. Specifically, we will evaluate the following basic regression:

\[ \log(wage_{it}) = \beta_0 + \beta_{Manu} Manu_{it} + \beta_{Agri} Agri_{it} + u \]

Here, the natural log of wage in the dataset is already generated with “lwage”. \( Manu_{it} \) is a dummy variable that identifies whether the individual works in a manufacturing industry, and \( Agri_{it} \) identifies whether the individual works in agriculture. If the individual works in neither, you may assume they work in services.

a. Please run this regression using pooled OLS, and interpret \( \beta_{Manu} \) and \( \beta_{Agri} \).

b. Suppose that we wish to add individual effects, and we run:

\[ \log(wage_{it}) = \beta_0 + \beta_{Manu} Manu_{it} + \beta_{Agri} Agri_{it} + \alpha_i + u_{it} \]

Please eliminate the individual effect using first differences, and interpret \( \beta_{Manu} \) and \( \beta_{Agri} \) precisely. Please be sure to include all code used to run this regression.

c. Please run the regression from 'b' using a fixed effects estimator, and interpret \( \beta_{Manu} \) and \( \beta_{Agri} \) precisely.

d. Given the results in (b) and (c) in comparison with the results in (a), please comment on the relationship of the observed effect \( \alpha_i \) to wages and industry choice.

e. Please calculate precisely the effect on the wage of an individual that moves from agriculture to manufacturing. Please show your work.