Chapter 11. Econometrics

1. After collecting data on sales people across multiple firms within an industry, you decide to estimate the following econometric model:

\[ \text{SALES}_i = \alpha_0 + \alpha_1 \omega_i + \alpha_2 \bar{\omega}_i + \varepsilon_i \]

where \( \text{SALES}_i \) is a measure of the number of units sold by individual \( i \) during the past month, \( \omega_i \) is individual \( i \)'s pay per unit sold, and \( \bar{\omega}_i \) is the average pay per unit sold by all other sale people at individual \( i \)'s firm. Comment on the likely signs of \( \alpha_1 \) and \( \alpha_2 \).

2. You hypothesize that larger firms face an upward-sloping labor supply curve as a result of the positive relationship between efficiency wage premiums and number of employees due to the inability to monitor worker effort in larger firms. To test this claim, you collect data on the salary of individuals and the size of the firm at which they work and estimate the following model via OLS:

\[ \omega_i = \alpha_0 + \alpha_1 \text{FSIZE}_i + \varepsilon_i \]

where \( \omega_i \) is individual \( i \)'s salary, and \( \text{FSIZE}_i \) size of individual \( i \)'s firm. You do, in fact, obtain an estimate of \( \alpha_1 \) which is positive and significant different from zero. Is this conclusive proof of your hypothesis?