ARE213 Problem Set #2A

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1 Problem #1

1.1 Part A

Here we will consider the within estimator, as suggested. This suggests that we want to find $\hat{\beta_{FE}}$ by running the following regression:

$$\ddot{Y_{it}} = \ddot{X_{it}'}\hat{\beta_{FE}} + \ddot{\epsilon_{it}} \tag{1}$$

Where $\ddot{Y_{it}} = Y_{it} - \bar{Y_i}$, $\ddot{X_{it}} = X_{it} - \bar{X_i}$, $\bar{Y_i} = \frac{1}{T}\sum_{t=1}^{T} Y_{it}$, and $\bar{X_i} = \frac{1}{T}\sum_{t=1}^{T} X_{it}$. Given that we have T=2, these equations can be concisely reduced to the following:

$$\ddot{Y_{it}} = Y_{it} - \frac{1}{2}(Y_{i1} + Y_{i2}) \tag{2}$$

$$\ddot{X_{it}} = X_{it} - \frac{1}{2}(X_{i1} + X_{i2}) \tag{3}$$