**Homework One**

**Panel Data – Fixed and Random Effect Models**

**1. Data Set: Grunfeld**

1. Run an OLS Model with all data without any panel options

The OLS Model:

Copy-paste the Eviews Estimation window here.

1. Conduct a Hausman test to determine which model is appropriate FE or RE.

Copy-Paste the test result window from Eviews here

1. Run a Fixed Effect model

The FE Model:

Note that we are conducting a two-way () FE model here. Copy-paste the Eviews Estimation window here.

1. Test whether the FEs are relevant

Copy-Paste the test result window from Eviews here

1. Show the cross-section and period FEs

Copy-Paste *both* the test result windows from Eviews here

1. Run a RE model

The RE Model:

Note that we are conducting a two-way () RE model here. Copy-paste the Eviews Estimation window here.

1. Show the cross-section and period REs

Copy-Paste *both* the test result windows from Eviews here

**2. Dataset: Seatbelt**

The Model

Where

Y = *fatalityrate*

X = *sb\_usage*

Z = Controls – speed70, ba08, income, age, and primary

1. Create Summary Statistics Table

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Variable | Obs | Mean | Std. Dev | Max | Min | Skewness | Kurtosis |
| *fatalityrate* |  |  |  |  |  |  |  |
| *sb\_usage* |  |  |  |  |  |  |  |
| *speed70* |  |  |  |  |  |  |  |
| *ba08* |  |  |  |  |  |  |  |
| *income* |  |  |  |  |  |  |  |
| *Age* |  |  |  |  |  |  |  |
| *primary* |  |  |  |  |  |  |  |

1. Determine whether your model is a Fixed-Effect model or a Random-Effect model (replace the xx in the table with results from the Eviews)

**Table 3: Hausman Test**

|  |  |  |
| --- | --- | --- |
| **Test Summary** | **Fatality** | **Reject the Null Hypothesis** |
| Cross-Section Random | xx.xx  (x.xx) | Yes/No |
| Period Random | xx.xx  (x.xx) | Yes/No |
| Cross-section and Period Random | xx.xx  (x.xx) | Yes/No |

Note: Chi-Sq. Test Statistics and p-values are reported

Based on the probability, the fixed/random effect model fits best at 1% / 5% / 10% significant level. (Circle the correct answers based on the Eviews results.)

1. Create a Table Fixed or Random Effect Panel Estimations (FE or RE determined in Q2.b.)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Var: *fatalityrate* | I | II | III | IV |
| *sb\_usage* |  |  |  |  |
| *speed70* |  | ---- |  |  |
| *ba08* |  | ---- |  |  |
| *income* |  | ---- | ---- |  |
| *age* |  | ---- | ---- |  |
| *primary* |  | ---- | ---- |  |
| Observation Numbers |  |  |  |  |
| Adj. R2 |  |  |  |  |
| F-Stat  (p-value) |  |  |  |  |
| DW |  |  |  |  |
| Cross-Section FE or RE | No | Yes | Yes | Yes |
| Period FE or RE | No | Yes | Yes | Yes |

Note: \*\*\*, \*\*, \* implies statistical significance at 1%, 5%, and 10% respectively.