**Panel Econometrics**

Assignment #3

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**Question 1: One-factor RE model with AR(1) structure in the idiosyncratic disturbance**

1. After accounting for serial correlation, the scale of all estimates of the slope parameters decreases. Moreover, the scale of the estimates are decreasing with , with “tscorr” generating the smallest and “freg” generating the largest ;

This is due to the fact that , used in FGLS estimator, varies with the value of

|  |  |  |  |
| --- | --- | --- | --- |
| Table 1: Question 1 Regression Results | | | |
|  | (1) | (2) | (3) |
|  | RE | RE TSCORR | RE FREG |
| LINCOMEP | 0.555\*\*\* | 0.418\*\*\* | 0.379\*\*\* |
|  | (9.39) | (7.16) | (5.82) |
|  |  |  |  |
| LRPMG | -0.420\*\*\* | -0.344\*\*\* | -0.289\*\*\* |
|  | (-10.52) | (-10.16) | (-9.02) |
|  |  |  |  |
| LCARPCAP | -0.607\*\*\* | -0.547\*\*\* | -0.535\*\*\* |
|  | (-23.78) | (-20.90) | (-18.19) |
|  |  |  |  |
| Constant | 1.997\*\*\* | 1.735\*\*\* | 1.628\*\*\* |
|  | (10.83) | (8.32) | (6.18) |
|  |  |  |  |
| Observations | 342 | 342 | 342 |
| sigma\_u | 0.196 | 0.194 | 0.240 |
| sigma\_e | 0.0923 | 0.0638 | 0.0525 |
| rho\_ar |  | 0.744 | 0.899 |
| rho\_fov |  | 0.902 | 0.954 |

1. After accounting for serial correlation, slightly decreases by using “tscorr” but increases by using “freg”. On the other hand, , which is the “fraction of variance due to u\_i (random effects)” are both higher than 90% in two AR(1) models.

**Question 2**

1. Bai’s estimator
2. Estimate
3. Matrix F
4. Matrix

**Question 3**

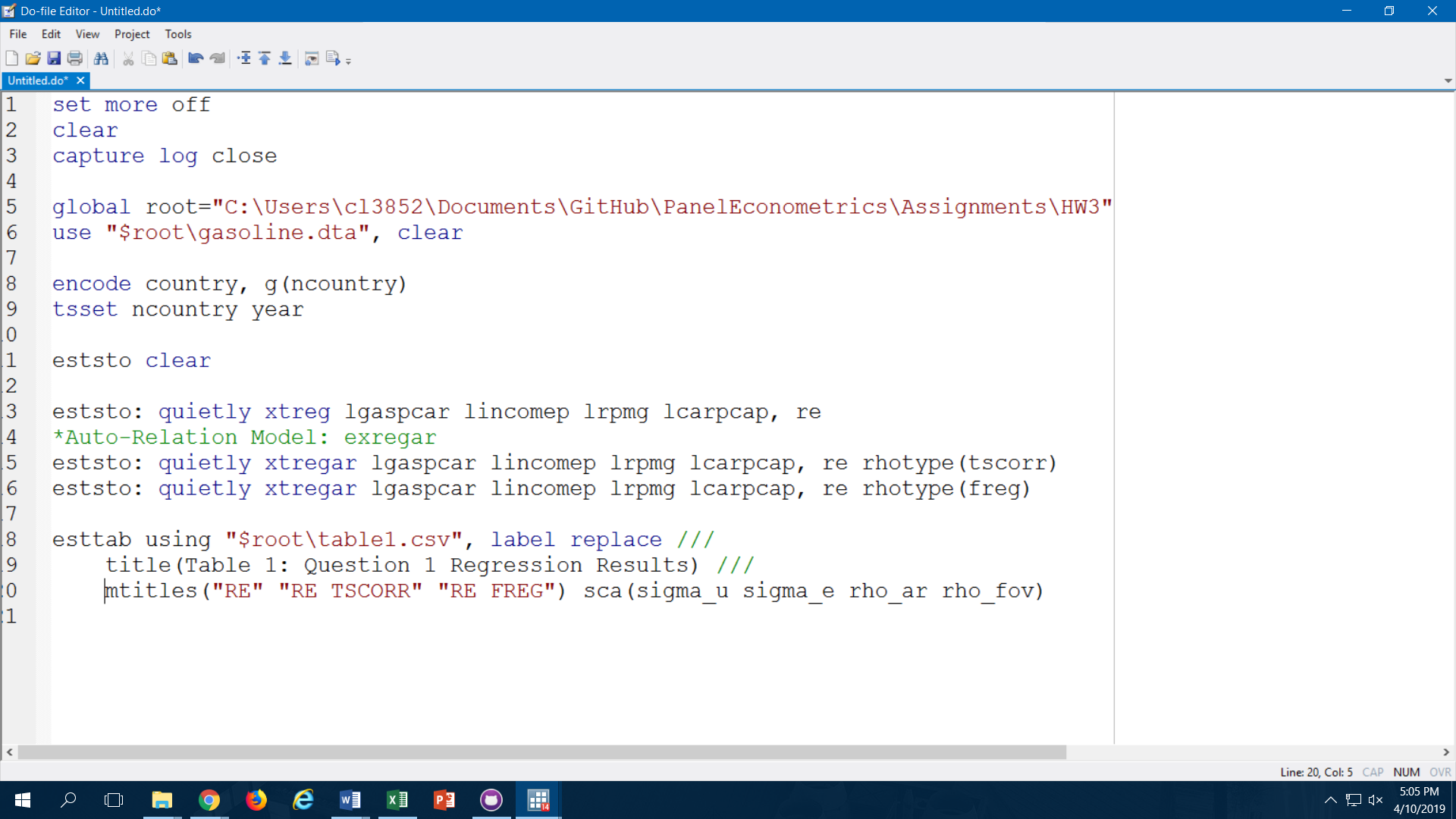
1. Restrictions to be removed;
2. Hausman Test
3. Hausman Test statistics
4. Hausman Test inference

**Question 4: Pesaran’s MG estimator and its variance**

|  |  |
| --- | --- |
| Table 4: Question 4 MG Esimator | |
|  | (1) |
|  | MG |
|  |  |
| LINCOMEP | 0.350\*\* |
|  | (2.83) |
|  |  |
| LRPMG | -0.277\*\*\* |
|  | (-5.94) |
|  |  |
| LCARPCAP | -0.432\*\*\* |
|  | (-7.64) |
|  |  |
| Constant | 2.193\*\*\* |
|  | (3.88) |
|  |  |
| Observations | 342 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | lincomep | lrpmg | lcarpcap | \_cons |
| lincomep | 0.015325 |  |  |  |
| lrpmg | -4.8E-05 | 0.002175 |  |  |
| lcarpcap | -0.00522 | -0.00016 | 0.003196 |  |
| \_cons | 0.053986 | 0.002266 | -0.00642 | 0.31966 |

**Codes for Question 1:**



**Codes for Question 2:**

**Codes for Question 3:**

**Codes for Question 4:**

