**ECO 82800 Panel Econometrics**

Homework 2

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Dataset: Baltagi and Griffin (1983), 18 OECD countries over 19 years, 1960‑1978.

Variables:

(1) CO = Country.

(2) YR = Year.

(3) LN(Gas/Car): The logarithm of motor gasoline consumption per auto.

(4) LN(Y/N): The logarithm of real per‑capita income.

(5) LN(Pmg/Pgdp): The logarithm of real motor gasoline price.

(6) LN(Car/N): The logarithm of the stock of cars per‑capita.

**Question 1**

1. FE model, test whether country effects are needed, assuming no year effects.
2. FE model, test whether time effects are needed, given the existence of country effects
3. RE model, test whether country effects are needed, assuming no year effects. (LR, LM, Honda, SLM, one-sided test of Gourieroux et al.)
4. RE model, test whether country and/or time effects are needed. (LM, Honda, SLM, one-sided test of Gourieroux et al.)

**Question 2**

1. One-factor model with country effects: RE vs FE using Hausman Test
2. One-factor model with country effects: GLS vs OLS using Hausman Test

**Question 3**

1. One-factor model with country effects: RE vs FE using Likelihood Ratio Test
2. One-factor model with country effects: RE vs FE using Arellano (1993)