Econometrics I — Mini Assignment

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Submission: Upload one ZIP to e-learn
Due: Mon, 3 Nov 2025, 23:59 (local)
Filename: **HW_Econ1_Lastname_Firstname.zip**

Your ZIP must include:

- answers.pdf (hand answers + pasted EViews outputs/screens)
- EViews workfile(s) (.wf1) and any small CSVs you used

Data options (pick whichever is easiest):

- Wooldridge datasets (e.g., WAGE2, HPRICE1) — export to CSV and import to EViews.
- FRED series via EViews (Add-ins ▶ Database: FRED): CPIAUCSL (CPI, SA), GDPC1 (Real GDP), UNRATE (Unemployment)
- Or generate your own data in EViews (instructions below).

Keep each answer short. A couple of lines or one small paragraph + the requested numbers/screens is enough.

Q1. (Hand — Gauss–Markov & Unbiasedness, very short)

(a) List the Gauss–Markov assumptions in a bullet list (one short line each).

(b) Define unbiasedness of an estimator in one sentence.

(c) Sketch (2–3 lines) why OLS is unbiased when $E(u \mid X) = 0$.

(d) If errors are heteroskedastic but $E(u|X)=0$ still holds, what happens to: (i) unbiasedness, (ii) usual OLS standard errors?

Q2. (EViews + Hand — one simple OLS)

Using WAGE2 (or any similar wage dataset you find easiest to import):

1. Run log(wage) on educ (include a constant).
2. Report: $\hat{\beta}$_educ, its SE, t-stat, p-value, and R^2 (copy the small EViews table).
3. In one line, interpret $\hat{\beta}$_educ as a % effect.

4. Compute a 95% CI for β_educ by hand using the reported SE (write the formula and numbers).

Q3. (EViews + Hand — omitted variable bias intuition)

Using the same file:

5. Re-estimate log(wage) on educ and exper (plus constant).
6. Did $\hat{\beta}$_educ go up or down vs. Q2?
7. In 2–3 lines, explain the sign of the change using omitted variable bias intuition.

Q4. (EViews — tiny ARDL by simulation; keep it mechanical)

Create a new unstructured workfile with 100 observations (e.g., wfcreate u 100). Then generate:

```
series e  = @nrnd

series v  = @nrnd

series x  = 0.6*x(-1) + e         ' exogenous AR(1)

series y  = 0.5*y(-1) + 0.3*x + v ' ARDL(1,0): y depends on y(-1) and x_t


equation eq1.ls y c y(-1) x
```

8. Report the estimated coefficients on y(-1) and x.
9. Compute the implied long-run effect of x on y: LR = $\hat{\beta}$_x / (1 − $\hat{\beta}$_{y(-1)}). Compare to the true LR = 0.6 in one sentence.

Q5. (EViews — a baby VAR with two macro series)

Fetch quarterly data (e.g., 2005Q1–2024Q4) for CPIAUCSL and UNRATE in EViews (FRED add-in). Create:

```
series inf = 100 * dlog(CPIAUCSL)

series unr = UNRATE
```

Steps:

10. Use lag length selection (AIC, max lag 4) and estimate a VAR with a constant (accept the suggested lag).
11. Report the chosen lag length and the coefficient on inf(-1) in the inflation equation (is it significant?).
12. One sentence: does inflation show persistence (based on that coefficient)?

(If FRED is blocked, simulate two AR(1) series and repeat.)

Q6. (Hand — one-liners to wrap up)

Answer in one sentence each:

13. What is the difference between unbiasedness and consistency?
14. What does BLUE mean in the Gauss–Markov theorem (say it explicitly)?
15. In one line, how does ARDL differ from a VAR in terms of exogenous/endogenous treatment?

Minimal EViews hints (optional)

- Import CSV: File ▶ Open ▶ Foreign Data as Workfile…
- Wooldridge data: download a CSV and import.
- FRED: File ▶ Open ▶ Database… ▶ FRED; search IDs like CPIAUCSL, UNRATE, GDPC1.
- Transformations: Quick ▶ Generate Series (e.g., inf = 100*dlog(CPIAUCSL)).
- OLS: Quick ▶ Estimate Equation (e.g., log(wage) c educ exper).
- VAR: Quick ▶ Estimate VAR… (add inf unr, choose lags, include constant), then View ▶ Lag Structure (AIC).

Formatting/Submission: keep it short; paste small EViews tables/screens in answers.pdf. Upload the ZIP (HW_Econ1_Lastname_Firstname.zip) to e-learn by Mon, 3 Nov 2025, 23:59.