

ECON-UN3412: Econometrics

Recitation 1: Introduction and Logistics

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About me

- ▶ From Southeast Asia (Manila, Jakarta, Ho Chi Minh City)
- ▶ Undergrad: NYU Stern (New York, London, Shanghai)
- ▶ Work: Stanford (Earth Systems Science Department)
- ▶ Grad School:
 - ▶ Oxford (MPhil, economics)
 - ▶ Columbia (PhD, economics)
 - ▶ Teaching: Intro to Econometrics (x4), Intermediate Micro (x2), The Global Economy
 - ▶ Research: climate change, inequality, development, political economy

Recitations: on Zoom, usually Tuesdays from 5:00-6:30pm

- ▶ Structure
 - ▶ Introduce new R commands
 - ▶ Practice problems in next problem set
 - ▶ Go over exam questions
 - ▶ If time remains, some bonus office hours
- ▶ Attendance
 - ▶ Cameras on as much as possible
 - ▶ Interrupt with questions at any time
- ▶ Courseworks folder: Files/Recitations
 - ▶ Textbook pdf
 - ▶ Problem Set R Notebook Template
 - ▶ Recitation materials (e.g., Notebooks and iPad work)
 - ▶ Recitation recordings
 - ▶ iPad work from office hours

Office Hours: on Zoom, the day before pset due dates

- ▶ Help with coding, psets, or general course material
- ▶ Advice: course selection, economics, grad school, research, etc.
- ▶ Feedback: pace of course, homework difficulty, recitation structure, general venting
- ▶ First hour: individual appointments booked through Calendly
- ▶ Second hour: regular walk-in appointments
- ▶ Weekly schedule in previous email

Teachers (Lop). The table below shows the sample means and standard deviations from her sample.

Variable	Sample Means	Sample Standard Deviations
TestScore	780.3	60.9
RPM	0.40	8.28
TEAP	15.2	3.6

After standardizing *RPM* and *TEAP* and subtracting the sample mean from *TestScore*, she estimates the following regression:

$$\text{TestScore} = -48.7 \times \text{RPM} + 8.7 \times \text{TEAP} + 44.6$$

c) $\hat{Y} = \bar{y} + \bar{x}_1 \cdot \hat{\beta}_1 + \bar{x}_2 \cdot \hat{\beta}_2 \Rightarrow \hat{Y} = \bar{y} + \hat{\beta}_1 \cdot \bar{x}_1 + \hat{\beta}_2 \cdot \bar{x}_2$

$$\hat{y} = \bar{y} - \bar{y}, \quad \bar{x}_1 = \frac{x_1 - \bar{x}_1}{\sigma_{x_1}}, \quad \bar{x}_2 = \frac{x_2 - \bar{x}_2}{\sigma_{x_2}}$$

$$\hat{Y} = \bar{y} + \bar{x}_1 \cdot \hat{\beta}_1 + \bar{x}_2 \cdot \hat{\beta}_2$$

$$\hat{Y} - \bar{y} = \hat{\beta}_1 \cdot \left(\frac{x_1 - \bar{x}_1}{\sigma_{x_1}} \right) + \hat{\beta}_2 \cdot \left(\frac{x_2 - \bar{x}_2}{\sigma_{x_2}} \right)$$

$$\Rightarrow \underbrace{\hat{y} + \hat{\beta}_1 \cdot \left(\frac{x_1 - \bar{x}_1}{\sigma_{x_1}} \right) + \hat{\beta}_2 \cdot \left(\frac{x_2 - \bar{x}_2}{\sigma_{x_2}} \right)}_{\hat{y}} = \underbrace{\left(\frac{\hat{\beta}_1}{\sigma_{x_1}} \right)}_{\hat{\beta}_1} \cdot \underbrace{x_1 + \left(\frac{\hat{\beta}_2}{\sigma_{x_2}} \right)}_{\hat{\beta}_2} \cdot \underbrace{x_2}_{\hat{\beta}_2}$$

a. You are interested in using the estimated regression to predict average test scores for an out-of-sample school with *RPM* = 0.52 and *TEAP* = 11.1.

- Compute the standardized (standardized) values of *RPM* and *TEAP* for this school, that is compute the Z^{RPM} values from the X^{RPM} values, according preceding Equation (14.1).
- Compute the predicted value of average test scores for this school.

b. The actual average test score for the school is 775.3. Compute the error for your prediction.

c. The regression shown above was estimated using the standardized regressors and the detrended value of *TestScore*. Suppose the regression

Other resources

- ▶ Ed Discussion
 - ▶ Email me for individual-specific matters. Otherwise, Ed Discussion.
 - ▶ Will keep tabs but also please feel free to help your classmates as well
 - ▶ All questions on course material, problem sets, exams, etc.
- ▶ Gradescope
 - ▶ Problem sets submitted as pdfs (e.g., R Notebooks for empirical questions)
 - ▶ Please tag your problem sets correctly (match all relevant pages to each question)
 - ▶ Regrade requests open after psets are graded
- ▶ Coding help
 - ▶ I'll share external links as we go along
 - ▶ Google and StackOverflow
 - ▶ ChatGPT
 - ▶ Self-organization (e.g., study groups, student WhatsApp)

Plan for today

1. Introduction to R, RStudio and R Notebooks
 - ▶ File management
 - ▶ Commands needed for pset 1
 - ▶ How to create problem set submissions
2. Practice problems for pset 1
3. Remaining time: questions?