EC 320: Introduction to Econometrics
Need to Know / Be Able To

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Fall 2025

Overview:

The following sheet should provide you some understanding of:

- What we have learned in the second part of this course.
- What I expect you to understand well by the final.
- What types of questions you can expect to answer on the final exam.

The purpose of doing this assignment is to give you a general outline of how we got to this point in the course — that is, how we got to our current understanding of multiple linear regression. In doing this assignment, I also hope to give you just one more study tool as well as a resource you can look back on when you take EC421 and beyond. I will note that some of what is on this is helpful to this day as I work on my research.

When I say "define", while I mean write out the equation, I also expect you to have an intuitive understanding such that you would be able to write, *in words*, what that word(s) mean.

Carry Over

While this exam is *not* cumulative, there is some information you will need to know. In particular, be sure you can:

- Identify significance using a $t-test$ or via $p-value$. You will not need to use a table, but may need to identify significance given a coefficient, standard error and t critical value parameter.
- Interpretation of simple and multiple linear regression is technically "learned" in Chapters 1-3 but is a lifelong skill.

- Recalling the simple OLS estimator is helpful, but not necessary.

$$\hat{\beta} = \frac{\sum_i (x_i - \bar{x})(y_i - \bar{y})}{\sum_i (x_i - \bar{x})^2} \tag{1}$$

Chapter 4:

- Identify if a given model is linear in parameters.
- Identify if a given model is linear in variables.
- If the model is not estimable via OLS, identify ways you can transform the model to make it so.
  - ex 1.) Redefining non-linear variables.
  - ex 2.) Taking logarithms
- Interpret non-linear estimations. For example (but not limited to):
  - Quadratic specification
  - Log-log
  - Semi-log (Log-lin or Lin-log)
  - Interaction Terms
- Recall what a Ramsey RESET tests for (with no need to understand how exactly to carry it out).

Chapter 5:

- Given a defined categorical variable, write a model that utilizes dummy variables.
  - e.g. If the category is years in undergrad, you would include a dummy variable for freshmen, sophomore, junior and/or senior.
- Interpret a dummy variable in the following contexts:
  - On it's own.
  - Interacted with another dummy variable.
  - Interacted with another continuous variable.
- Identify and explain the dummy variable trap.

Chapter 6:

- Understand the impact of an omitted variable on OLS estimation.
  - Define the source(s) of the bias from variable omission.
- Understand the impact of a redundant variable on OLS estimation.
  - Understand how the redundant inclusion may impact inference.