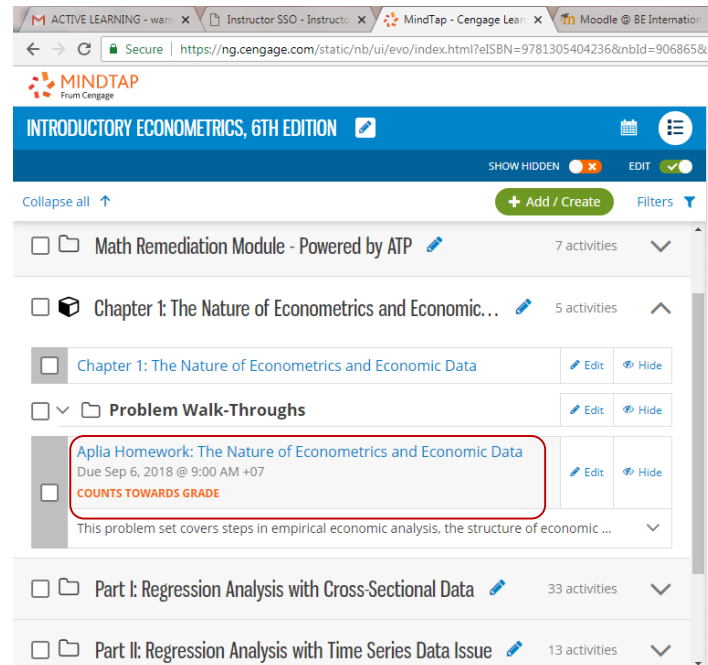


EE325 Homework 1

Due date: Thursday 6th September by 9:00am

This homework consists of 2 parts.

Part 1: Online exercise. For the online exercise, I have assigned 28 question under chapter 1: The Nature of Econometrics and Economic Data. The exercise will be available under 6th Sep at 9:00am.



Part 2: Paper and Pencil exercise. Please **choose to work on two of the following questions**. You can submit his homework in class (right before the class begin @9:30am) on 6th September.

1. Suppose that you are asked to conduct a study to determine whether smaller class sizes lead to improved student performance of fourth graders.
 - i. If you could conduct any experiment you want, what would you do? Be specific.
 - ii. More realistically, suppose you can collect observational data on several thousand fourth graders in a given state. You can obtain the size of their fourth-grade class and a standardized test score taken at the end of fourth grade. Why might you expect a negative correlation between class size and test score?
 - iii. Would a negative correlation necessarily show that smaller class sizes cause better performance? Explain.

2. A justification for job training programs is that they improve worker productivity. Suppose that you are asked to evaluate whether more job training makes workers more productive. However, rather than having data on individual workers, you have access to data on manufacturing firms in Ohio. In particular, for each firm, you have information on hours of job training per worker (*training*) and number of nondefective items produced per worker hour (*output*).
- Carefully state the ceteris paribus thought experiment underlying this policy question.
 - Does it seem likely that a firm's decision to train its workers will be independent of worker characteristics? What are some of those measurable and unmeasurable worker characteristics?
 - Name a factor other than worker characteristics that can affect worker productivity.
 - If you find a positive correlation between *output* and *training*, would you have convincingly established that job training makes workers more productive? Explain.
3. Suppose at your university you are asked to find the relationship between weekly hours spent studying (*study*) and weekly hours spent working (*work*). Does it make sense to characterize the problem as inferring whether *study* "causes" *work* or *work* "causes" *study*? Explain.
4. States (and provinces) that have control over taxation sometimes reduce taxes in an attempt to spur economic growth. Suppose that you are hired by a state to estimate the effect of corporate tax rates on, say, the growth in per capita gross state product (GSP).
- What kind of data would you need to collect to undertake a statistical analysis?
 - Is it feasible to do a controlled experiment? What would be required?
 - Is a correlation analysis between GSP growth and tax rates likely to be convincing? Explain.