Final Exam Review

Below are topics we discussed in class. We add a learning objective after each topic to remind ourselves of what we should accomplish.

Topic #1: Overview of the CGE modeling

We started by examining what was a (**C**)GE model and what kinds of problems were more appropriate to be examined by CGE models. We also looked at the CGE model and compared it with a partial equilibrium model and an econometric approach. Then we considered some of the benefits and drawbacks of CGE modeling. Then we looked at the overall steps in CGE modeling, how agents in the economy fit in the system, and how commodity flows in the system. We finished with the theory behind CGE modeling (Walras' law).

Learning Objective:

We should know what is (**C**)GE modeling and why is it important as well as what are the benefits and drawbacks of CGE modeling. We should be acquainted with steps in modeling the CGE problem. Given a particular problem, we should be able to decide and justify our decision on which model (CGE model, partial equilibrium, or an econometric approach) should be used. We should also understand Walras' law.

Topic #2: The basic structure of the CGE model

We started with the basic relationships that compose CGE model and characteristics of solutions involving depiction of industry and factor demands, zero profits, households, and the government. Then we looked at Walras' law which later led us to understand the mixed complementary relationship that was a basic concept of how the CGE model was solved. We also looked at the complementary requirements of a mixed complementary problem. After that we modified the basic CGE model to include a tax. Finally, we conducted a comparative analysis between scenarios without and with a tax and briefly interpreted those results.

Learning Objective:

We should be able to set up the basic relationships for a simple CGE model as we did in homework #1. Given comparative results we should be able to interpret results between the benchmark and the counterfactual equilibriums. Especially, we should know why counterfactual equilibrium results differ from the benchmark equilibrium results and what are the factors driving these kinds of results.

Topic #3: Introduction to GAMS

The focus of this topic was to make one familiar with GAMS and learn the basic features of GAMS and GAMS IDE.

Learning Objective:

We have sufficiently demonstrated this knowledge in homework#2 and #3. So there will be no questions on GAMS during the in-class final exam.

Topic #4: Casting CGE models in GAMS

The importance of this topic was to learn the basics of formulating CGE models in GAMS.

Learning Objective:

We have sufficiently demonstrated this knowledge in homework#2 and #3. So there will be no questions on GAMS during the in-class final exam.

Topic #5: Nested function

We discussed the nested functions and the usefulness of the nested functions. In class, we made use of a diagram to illustrate how the nested functions were modeled in the production and the consumption. We also looked at pros and cons between the Cobb Douglas and CES functions. We learned how to incorporate the nested functions in GAMS.

Learning Objective:

Everyone has already had an opportunity to model these nested functions in GAMS through homework #3 so we should not worry about the GAMS part. However, given production sectors, factors, or consumption goods, we should be able to show how to model nested functions using a simple diagram and should also know the logic behind the use of these nested functions. We should be able to decide on functional forms used in each nest. We do not have to memorize their specific functional forms, but should know the pros and cons for Cobb Douglas and CES since they are commonly used in CGE models.

Topic #6: Data & Calibration

We briefly looked at SAM and Input-Output (IO) tables and how to read and interpret numbers from these tables. We reviewed steps used in building the data and what to do if we have inconsistent data. Then we used some numerical examples to show how to calibrate behavioral parameters. We also learned how to enter SAM data in GAMS and how to use GAMS to calibrate behavioral parameters. We also learned from homework #2, Q#3 problem regarding the implication the calibration procedure has on the benchmark equilibrium.

Learning Objective:

We should understand values or numbers given in SAM or IO tables and know steps used to develop data as well as what to do when facing inconsistent data such as when demands are not equal to supplies, or household incomes are not equal to household expenditures.

Since we have already worked on the calibration procedure in the homework, there is no numerical question on the calibration. However, we should recognize the significance of the calibration procedure and how it influences the benchmark equilibrium results.

Topic #6: Modeling an open economy

In this topic, we learned how to modify and/or add equations in the model when moving from a closed economy to an open economy. We also learned how to incorporate an open economy in GAMS.

Learning Objective:

We should know the basic structure of the open economy model and know how to set up in GAMS. This part is already included in homework #3 so it will not be an in-class final exam.

Topic #7: Evaluating impacts of policy changes

We took a quick look at how to calculate welfare measures (CV and EV) and prices and quantities measures in evaluating impacts of policy changes.

Learning Objective:

We should know how welfare measures (CV and EV) and prices and quantities measures are computed.

Topic #8: Mixed Complementary Problem (MCP)

We learned how the MCP works and what requirements for solving the MCP are, as well as what to do if we have peculiar results.

Learning Objective:

We should understand how the MCP works and requirements for solving this type of problem. We should be able to recognize if results are rational or absurd as well as know how to overcome those results.

GOOD LUCK