

# General Equilibrium Analysis Part IV

## Parting Advice

Capacity Building Workshop  
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# Introduction

- At this stage we have examined a basic CGE model using GAMS and used it to explore the effects of various changes in the economic environment.
- Our primary objective has been to give you a feel for how CGE models work, and what types of questions they can be used to shed light on.
- There are, of course, a large number of important topics in computable general equilibrium modeling that cannot be adequately dealt with such a short time.
- In this final session we will review resources you can use to learn more about CGE.
- We will also provide some parting advice about what makes a 'good' CGE study.

- To learn more about the structure of basic computable general equilibrium models, Hosoe *et al.* (2010) and/or Burfisher (2011) provide accessible introductions to the 'standard' CGE model and applications.
- Both are written with the beginner in mind.
- Gilbert and Tower (2012) is another text that has more of a focus on the 'pure' theory of international trade and how it links with CGE models.
- Whalley (2012) is a more advanced treatment that describes applications of general equilibrium computational methods to a range of policy and other issues involving the global economy and international trade.

- One of the most widely used CGE models at present is the GTAP model.
- The GTAP model is a global trade model, but the basic structure of each region within the model is essentially the same as the one that we have outlined.
- If you are interested learning more details about the GTAP model, you will probably want to start with Hertel (1997).
- GTAP is built using the GEMPACK software package rather than GAMS, so some investment in learning about that package is also required.
- Even if you are not planning on using the GTAP model itself, you will find the website to be a rich resource for data and advice on various modeling issues.

- An excellent way to get a feel for the different types of problems that CGE models have been used to address, and the ways in which they have been used to address them, is simply to read a lot of published studies.
- Survey articles are a good place to start. Recent overviews of computable general equilibrium analyses (with a focus on trade policy issues) include Scollay and Gilbert (2000), Gilbert and Wahl (2002), Robinson and Thierfelder (2002), Lloyd and MacLaren (2004), and Gilbert, Furusawa and Scollay (2016).

# Tips for Modelers

- 1 Building a model is the easy part – the hard part is deciding what to model and how to model it.
- 2 Analyze interesting (and relevant) policy questions. Make sure the question is one where general equilibrium effects matter. Make a clear contribution to understanding the underlying economics.
- 3 Understand your causal mechanisms thoroughly — this requires a solid understanding of theory. Often building a small scale model (analytical or numerical) with the basic features of the economic mechanisms you want to capture is useful.
- 4 Be clear about everything — model structure, closure, data sources and shocks.
- 5 Think of CGE models as a consistent way of quantifying an economic story — the story is more important than the numbers.

# Tips for Consumers

- 1 The same basic points apply to the consumer side in identifying good CGE analysis as apply to the producer side in constructing it.
- 2 Ask the right questions!

# Questions on Data

- What is the base year?
- What adjustments have been made to the data (if any)?
- In what ways is the data deficient (what are the gaps)?



# Questions on Theory

- What is the closure?
- What are the assumptions on market structure?
- What is the treatment of time?

# Questions on Shocks

- What exactly is the shock?
- How closely does it represent the policy in question?

# Questions on Results

- Are the results reliable?
- What sensitivity tests were performed?
- Are the results economically significant?
- What are the factors that explain this result?
- How might the results change under different structural assumptions?
- How do the results compare to other studies?

# Key Points

- CGE is *not* an appropriate method for all types of question, though it can be very helpful for some.
- Data, theory, and shocks are the three basic elements of a CGE study, and combined they *determine* the results, so it is important to consider each carefully.
- A modeler should be able to articulate clearly to policymakers exactly what choices were made, why the choices were made, and what the consequences of those choices are.
- A modeler should also be able to clearly articulate to policymakers the limitations of the approach taken. At the same time, it needs to be recognized that all models are inherently limited. No models are 'right' – but some are useful.