

WiNDC Short Course Assessment

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Several students in last week's short course expressed interest in obtaining a certificate of participation. This short assignment is provided so that students may demonstrate their mastery of the material covered in the workshop.

In this exercise I'd like to have you formulate a general equilibrium model which is similar to the `aaenergy.gms` we went through on Thursday except that I would like to formulate this as an open rather than a closed economy model. You should assume that 40% of energy supply is imported, and 20% of Y output is exported. Trade is balanced, and the second import is an imperfect substitute for good Y in final demand. Assume that the elasticity of transformation between Y output for the domestic and export markets equals 4, and the elasticity of substitution between domestic and imported Y in final demand is 5. Imported energy is a perfect substitute for domestic energy.

1. Formulate a micro-consistent matrix which is consistent with the revised version of `aaenergy.gms`. (The information provided here is incomplete, so you will need to make some assumptions about how to produce a balanced dataset. This is part of the assignment, and I expect that if you work independently each paper will have a different set of assumptions and a different MCM.)
2. Implement an MPSGE model which replicates the benchmark.
3. Calculate the economic impact of a 50% ad-valorem tax on energy use. How do the open and closed economy models compare?
4. (*Bonus*) Formulate your model in GAMS/MCP equations and verify that you obtain the same results.