


# *smod\_t Exercises*

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## *Outline*

- Introduction
- Running the model
- Review model data and structure of the economy
- Load the model and test the model runs correctly
- Trade Policy Shocks
  - Use TMADJ - adjustor variable
  - Tax replacement
  - Factor market clearing
- Analyze the results
  - **Follow the prices – use the price tree diagrams!**
- Sensitivity to elasticity of substitution in CES
- Calibrating Stone-Geary utility functions
- International transfers

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## *Exercises*

- Exercise 1: Run the base model
  - Access files from the model user library
  - Model checks
  - Analyze the structure of the economy
- Exercise 2: Trade policy shocks
  - Equiproportionate reduction in tariffs
  - Reduce the tariff in a single sector
- Exercise 3: Tax Replacement
  - Replace lost tariff revenue with income taxes

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## *Exercises*

- Exercise 4: Factor Market Clearing
  - Tariff reduction with:
    - Full employment – long run
    - Full employment – activity specific factor (short run)
    - Surplus labour (Unemployment)
- Exercise X (post course!): Sensitivity Analysis
  - Change the elasticity of substitution between imports and the domestic variety


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## ***GAMS Coding Skills***

- Run policy simulations in a Loop (review)
  - **Check the simulation is implemented!**
  - Create parameters to collect results
- Write results to GDX files
- Use GAMS Studio to review contents of GDX files
  - Export to Excel
- GDX Merge Utility
  - compare.gms
- Avoids the need to run a Loop within a Loop
  - Reset required
  - Reintialise variables required
- Use include files for experiments


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## ***Interpret Results***

- Where does the policy shock affect the price structure?
  - Review the price tree diagrams
- What results do you **expect** to find?
  - Do this **before** you actually look at the numbers.
- What are the direct effects in the market you have shocked?
- What are the indirect effects on other markets?
- What are the general equilibrium effects?

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Stone-Geary Utility Function

- Complete demand systems
- Calibrating a Stone-Geary utility function
  - aka Linear Expenditure System

Normalised elasticities

$$\text{sumelast}(h) = \text{SUM}(c, \text{alphah}(c,h) * \text{ELASTY}(c,h)) ;$$
$$\text{yhelast}(c,h) \$ \text{sumelast}(h) = \text{ELASTY}(c,h) / \text{sumelast}(h) ;$$

Marginal Budget Shares

$$\text{beta}(c,h) = \text{yhelast}(c,h) * \text{alphah}(c,h) ;$$

‘Subsistence’ consumption

$$\text{qcdconst}(c,h) \$ (\text{PQD0}(c) \text{ and } \text{frisch}(h) \text{ and } \text{beta}(c,h))$$
$$= [\text{HEXP0}(h) / \text{PQD0}(c)] * (\text{alphah}(c,h) + (\text{beta}(c,h) / \text{frisch}(h))) ;$$

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International Transfers

- Transfers are important international transactions
  - Remittances
  - Aid
  - Factor service payments
  - FDI
  - ....
- The data used assumes these are all ZERO

International transfers can have important economic consequences



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***smod\_t Exercises***

**The End**

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