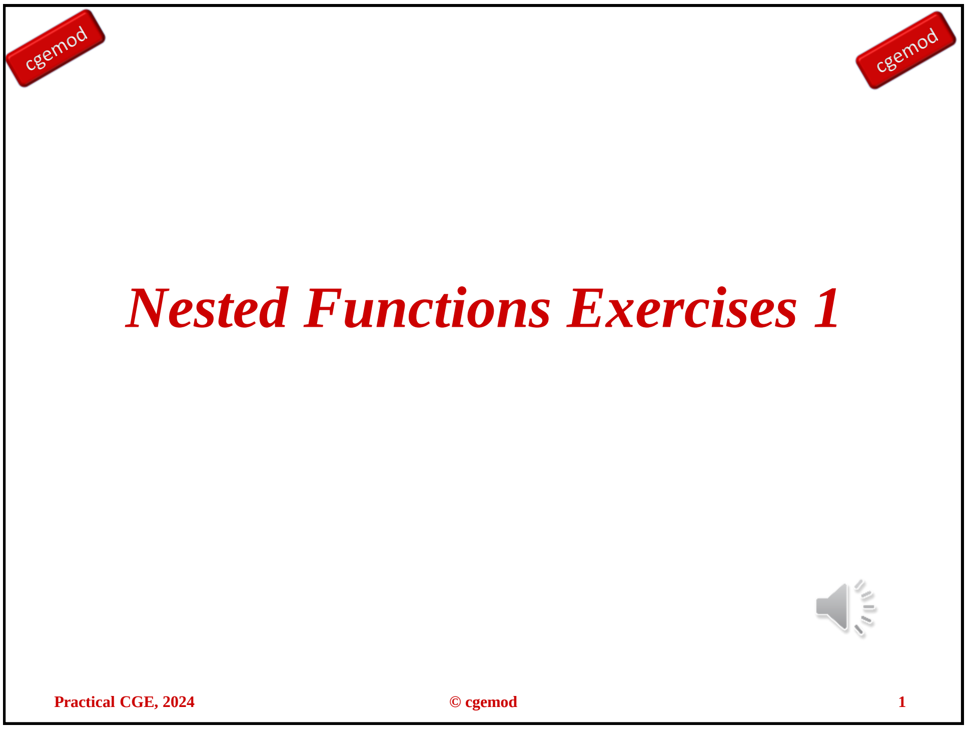

Nested Functions Exercises 1

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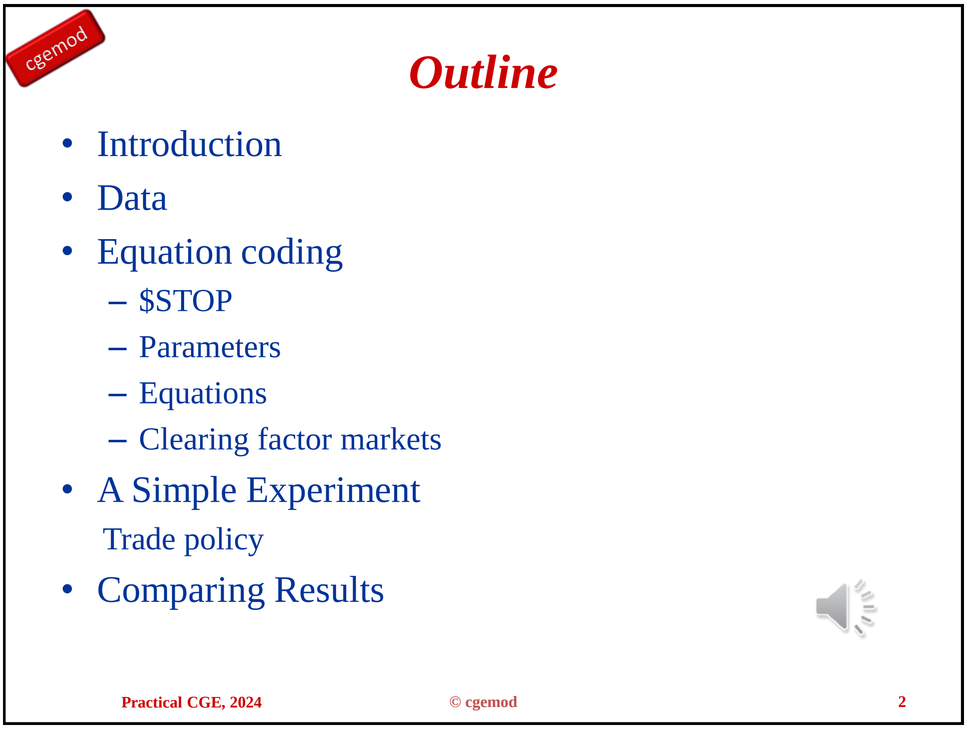
1



Outline

- Introduction
- Data
- Equation coding
  - $STOP
  - Parameters
  - Equations
  - Clearing factor markets
- A Simple Experiment

  Trade policy
- Comparing Results

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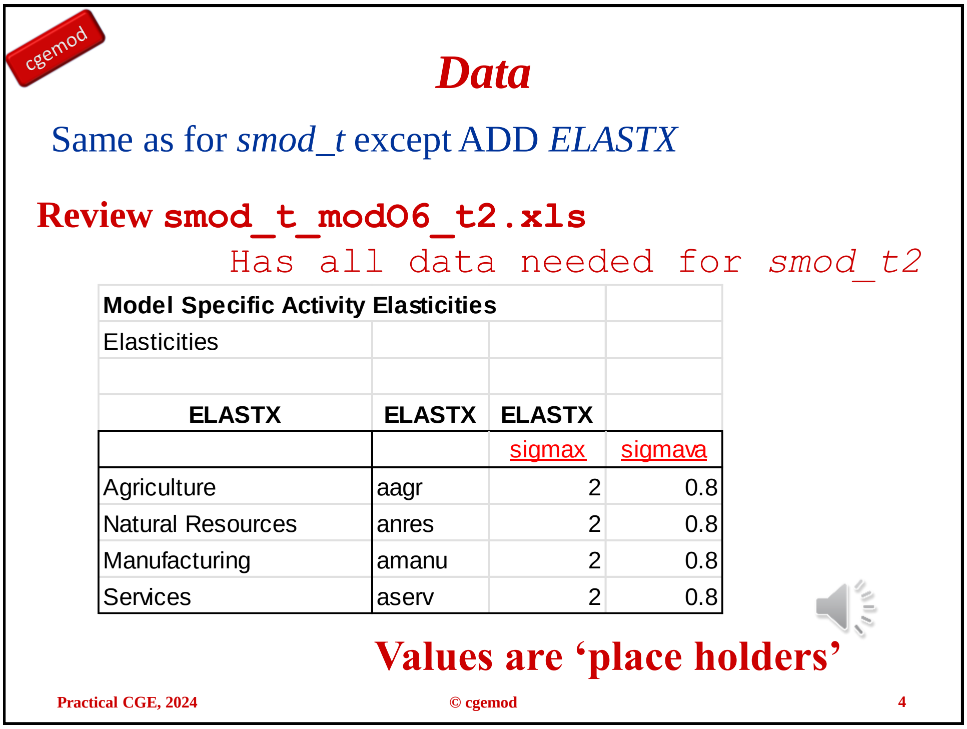
Data

3



Data

Same as for *smod_t* except ADD *ELASTX*

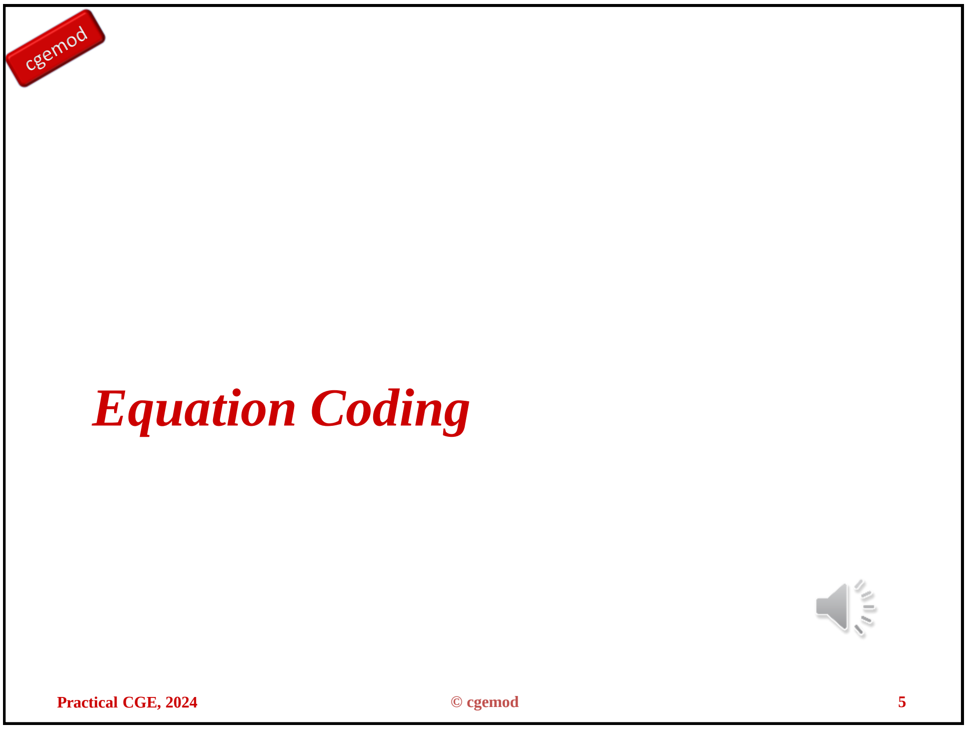
Review `smod_t_mod06_t2.xls`

`Has all data needed for` *`smod_t2`*

Model Specific Activity Elasticities			
Elasticities			
ELASTX	**ELASTX**	**ELASTX**	
		sigmax	sigmava
Agriculture	aagr	2	0.8
Natural Resources	anres	2	0.8
Manufacturing	amanu	2	0.8
Services	aserv	2	0.8

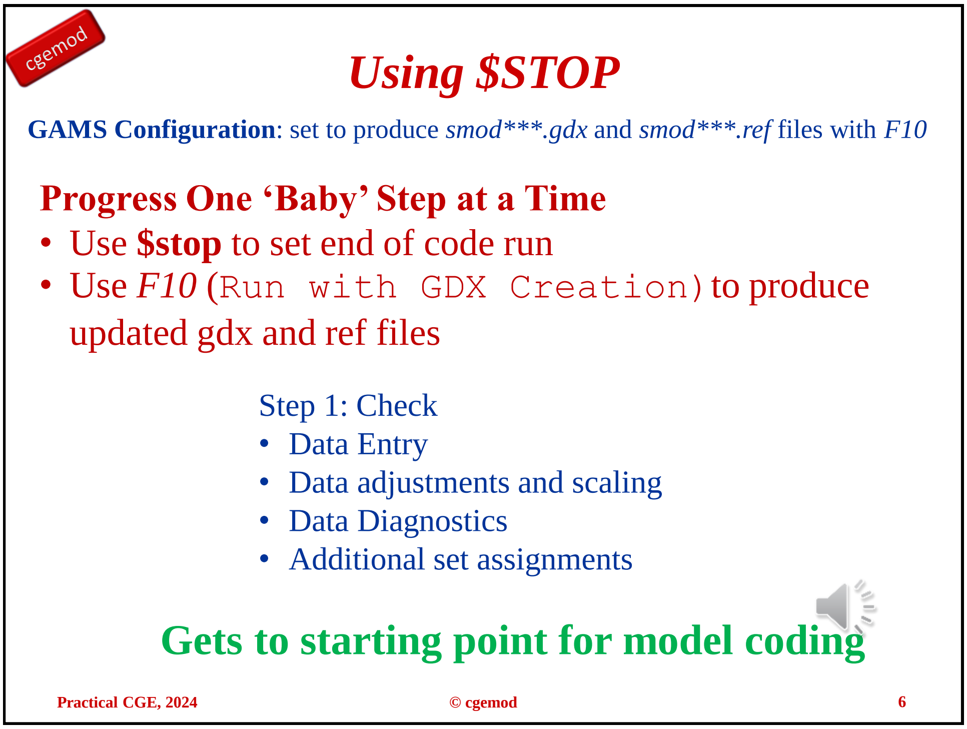
Values are ‘place holders’

4



Equation Coding

5



Using $STOP

GAMS Configuration: set to produce *smod***.gdx* and *smod***.ref* files with *F10*

Progress One 'Baby' Step at a Time

- Use **$stop** to set end of code run
- Use *F10* (`Run with GDX Creation`) to produce updated gdx and ref files

Step 1: Check

- Data Entry
- Data adjustments and scaling
- Data Diagnostics
- Additional set assignments

Gets to starting point for model coding

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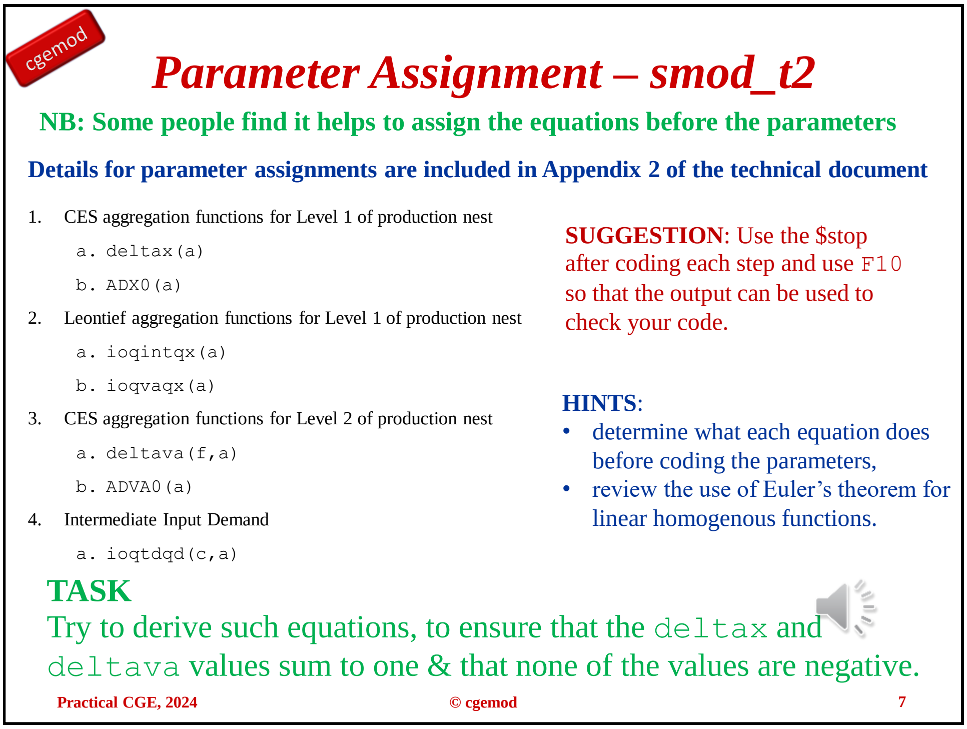


Parameter Assignment – smod_t2

NB: Some people find it helps to assign the equations before the parameters

Details for parameter assignments are included in Appendix 2 of the technical document

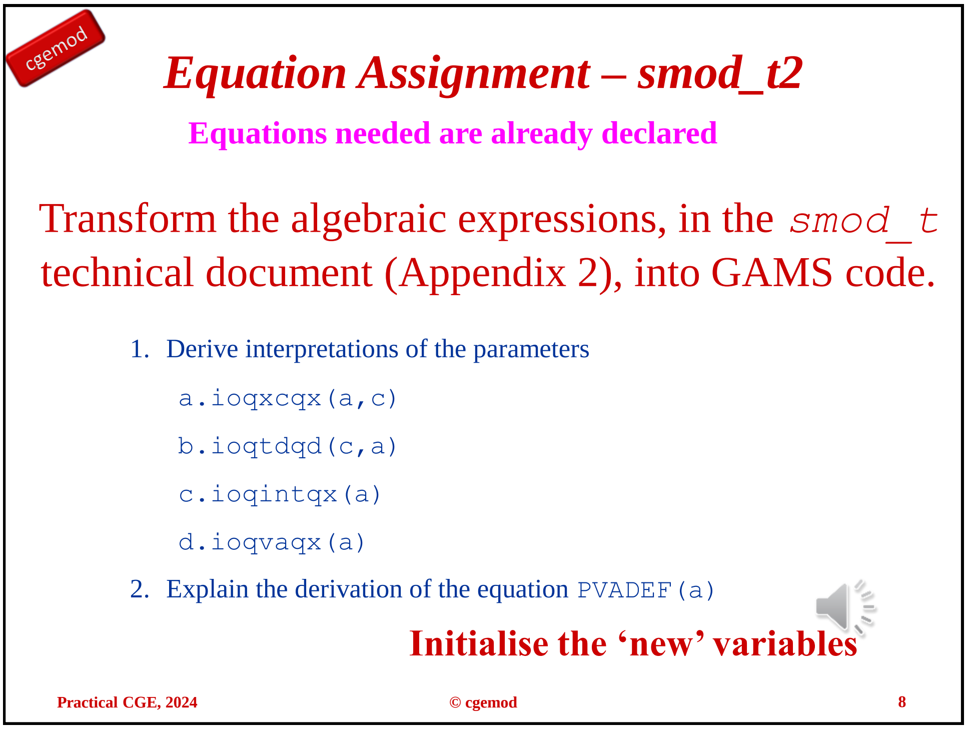
1. CES aggregation functions for Level 1 of production nest
   a. `deltax(a)`
   b. `ADX0(a)`
2. Leontief aggregation functions for Level 1 of production nest
   a. `ioqintqx(a)`
   b. `ioqvaqx(a)`
3. CES aggregation functions for Level 2 of production nest
   a. `deltava(f,a)`
   b. `ADVA0(a)`
4. Intermediate Input Demand
   a. `ioqtdqd(c,a)`

SUGGESTION: Use the $stop after coding each step and use `F10` so that the output can be used to check your code.

HINTS:
- determine what each equation does before coding the parameters,
- review the use of Euler's theorem for linear homogenous functions.

TASK

Try to derive such equations, to ensure that the `deltax` and `deltava` values sum to one & that none of the values are negative.



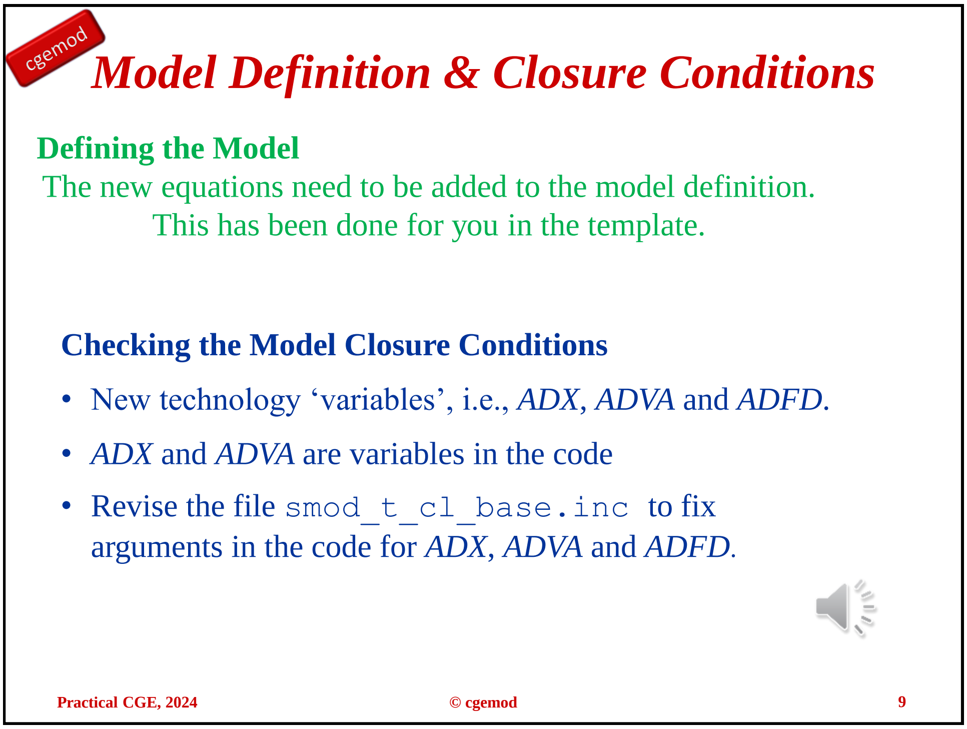
Equation Assignment – smod_t2

Equations needed are already declared

Transform the algebraic expressions, in the *`smod_t`* technical document (Appendix 2), into GAMS code.

1. Derive interpretations of the parameters
   a. `ioqxcqx(a,c)`
   b. `ioqtdqd(c,a)`
   c. `ioqintqx(a)`
   d. `ioqvaqx(a)`
2. Explain the derivation of the equation `PVADEF(a)`

Initialise the 'new' variables



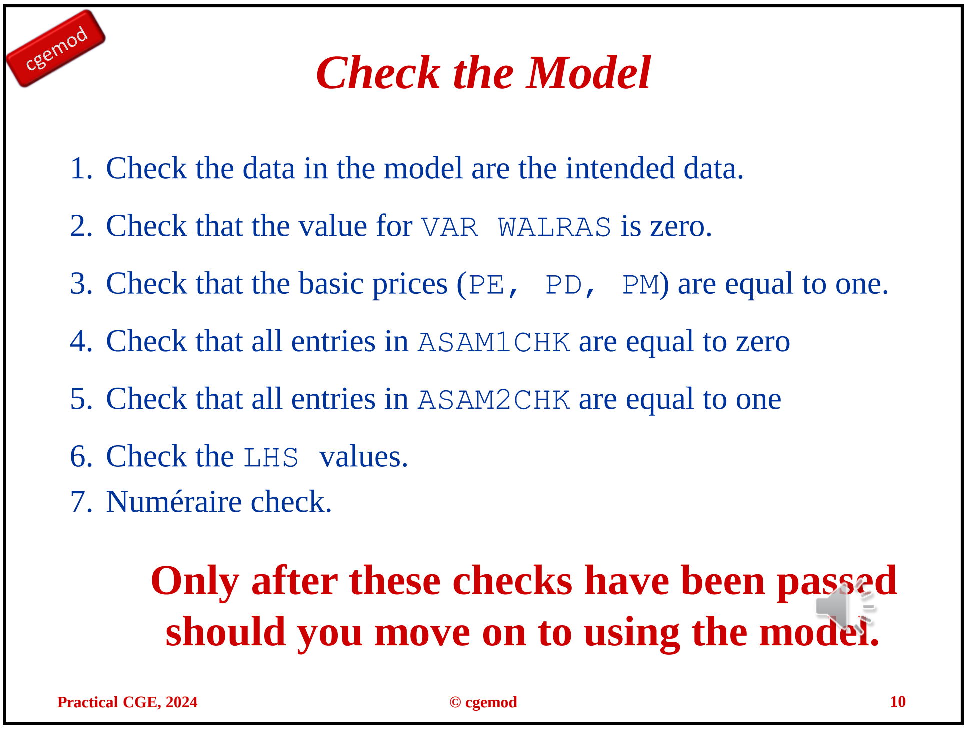
Model Definition & Closure Conditions

Defining the Model

The new equations need to be added to the model definition.
This has been done for you in the template.

Checking the Model Closure Conditions

- New technology 'variables', i.e., *ADX*, *ADVA* and *ADFD*.
- *ADX* and *ADVA* are variables in the code
- Revise the file `smod_t_cl_base.inc` to fix arguments in the code for *ADX*, *ADVA* and *ADFD*.



Check the Model

1. Check the data in the model are the intended data.
2. Check that the value for `VAR WALRAS` is zero.
3. Check that the basic prices (`PE, PD, PM`) are equal to one.
4. Check that all entries in `ASAM1CHK` are equal to zero
5. Check that all entries in `ASAM2CHK` are equal to one
6. Check the `LHS` values.
7. Numéraire check.

Only after these checks have been passed should you move on to using the model.

A Simple Experiment

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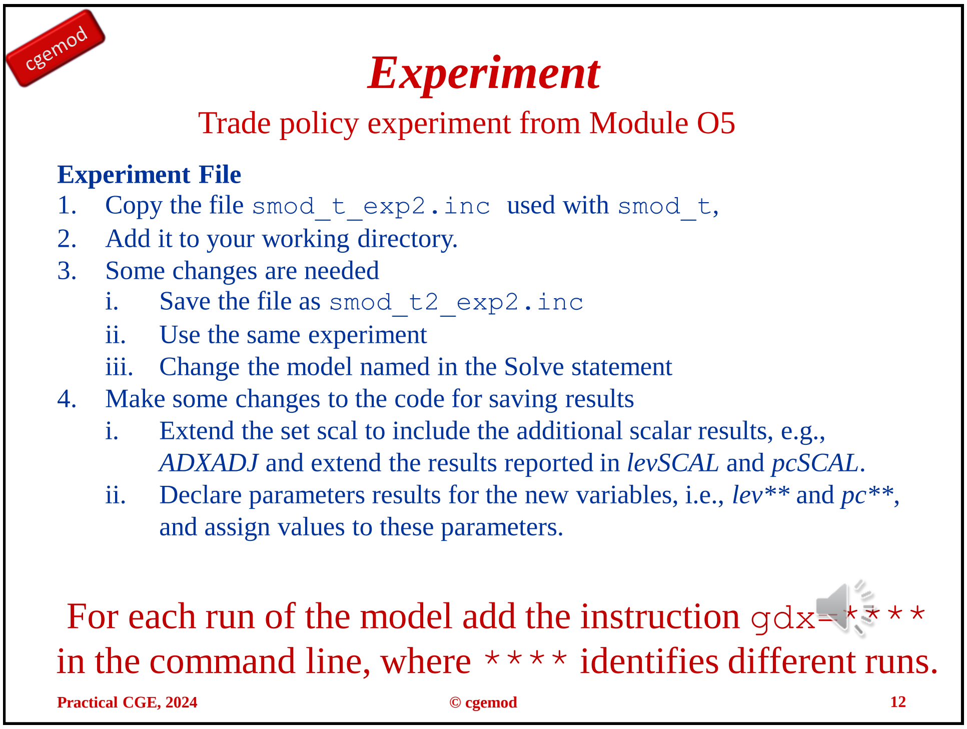

Experiment

Trade policy experiment from Module O5

Experiment File

1. Copy the file `smod_t_exp2.inc` used with `smod_t`,
2. Add it to your working directory.
3. Some changes are needed
   i. Save the file as `smod_t2_exp2.inc`
   ii. Use the same experiment
   iii. Change the model named in the Solve statement
4. Make some changes to the code for saving results
   i. Extend the set scal to include the additional scalar results, e.g., *ADXADJ* and extend the results reported in *levSCAL* and *pcSCAL*.
   ii. Declare parameters results for the new variables, i.e., *lev*** and *pc***, and assign values to these parameters.

For each run of the model add the instruction `gdx=****` in the command line, where `****` identifies different runs.

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Comparing Results

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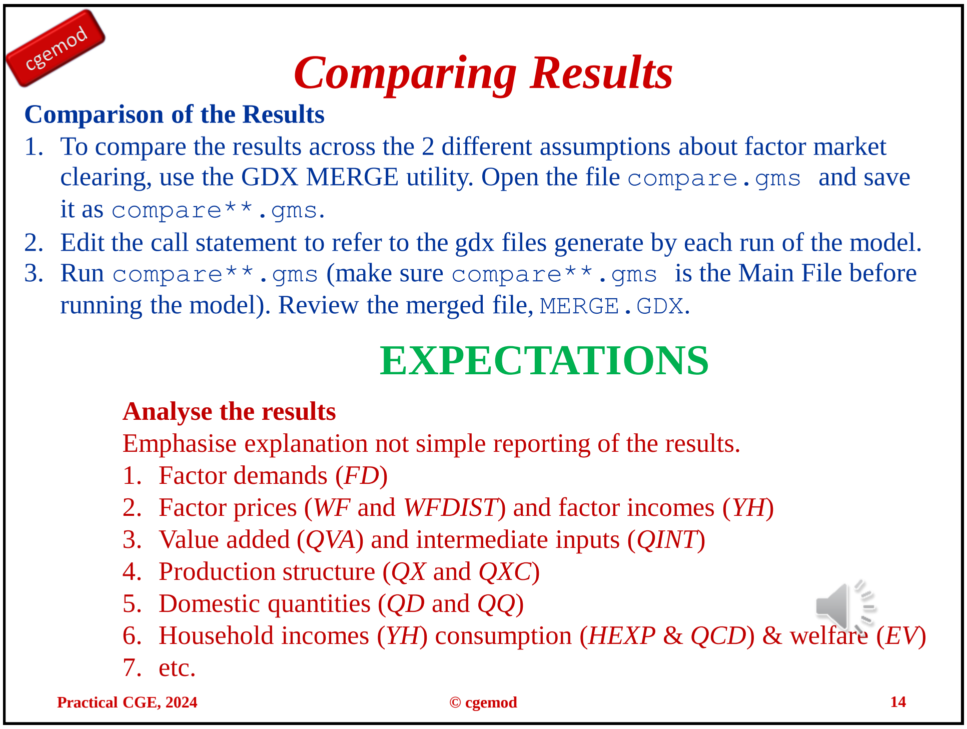

Comparing Results

Comparison of the Results

1. To compare the results across the 2 different assumptions about factor market clearing, use the GDX MERGE utility. Open the file `compare.gms` and save it as `compare**.gms`.
2. Edit the call statement to refer to the gdx files generate by each run of the model.
3. Run `compare**.gms` (make sure `compare**.gms` is the Main File before running the model). Review the merged file, `MERGE.GDX`.

EXPECTATIONS

Analyse the results

Emphasise explanation not simple reporting of the results.

1. Factor demands (*FD*)
2. Factor prices (*WF* and *WFDIST*) and factor incomes (*YH*)
3. Value added (*QVA*) and intermediate inputs (*QINT*)
4. Production structure (*QX* and *QXC*)
5. Domestic quantities (*QD* and *QQ*)
6. Household incomes (*YH*) consumption (*HEXP* & *QCD*) & welfare (*EV*)
7. etc.

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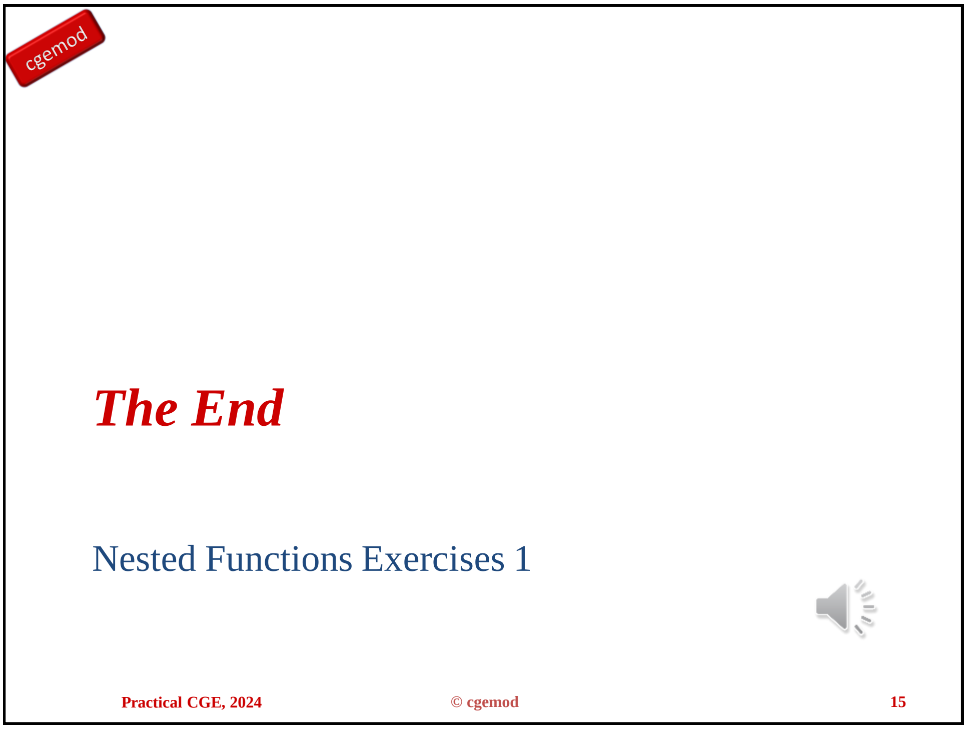

The End

Nested Functions Exercises 1

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