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STAGE

STAGE_t: Model Setup, Calibration and Checking



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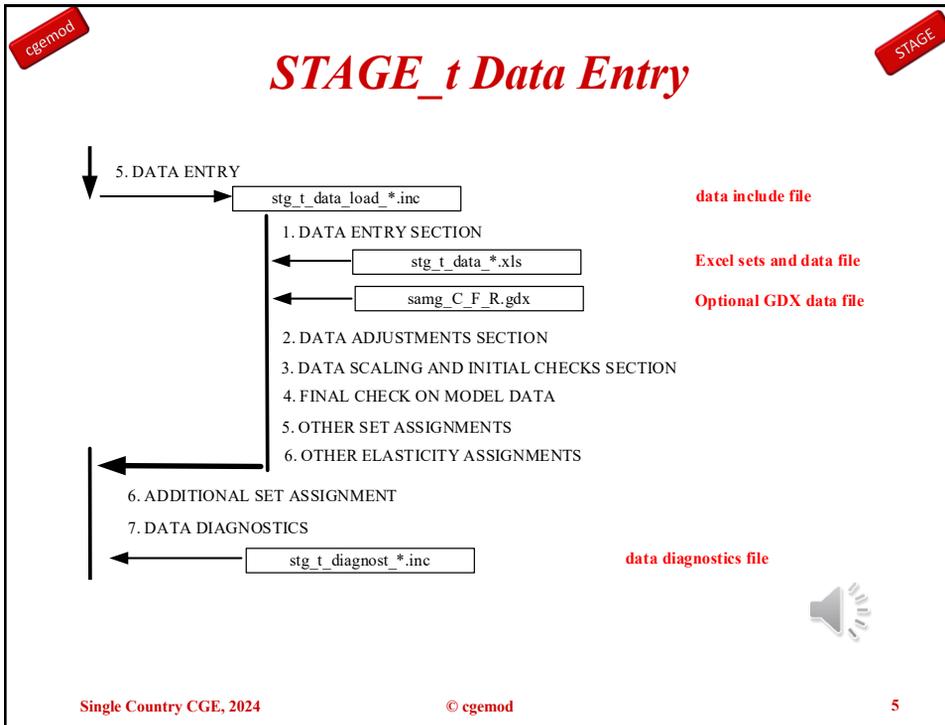
Outline

- STAGE_t database and data entry
 - stg_t_data_load.inc
- Model Configuration
 - Automatic scaling
 - ‘factuse’ and population data
 - Other set assignments
 - Other elasticities
- Diagnostics
- Model checks
 - SAM replication
 - Numéraire check
 - Other checks

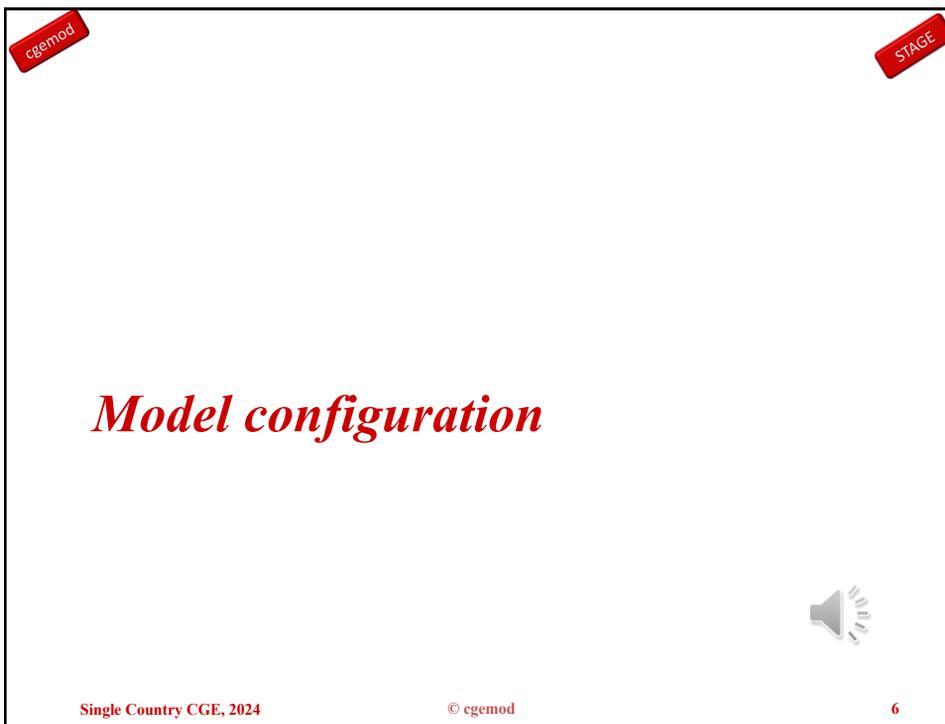


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Automatic Scaling

*---- 3a. Automatic Scaling of SAM
* Assigning values to initialise scaling parameter

```
samsscal          = mod_cont("samsscal") ;
```

WHILE (
 ((SUM((sacn,sacnp)\$SAM(sacn,sacnp)
 AND (ABS(SAM(sacn,sacnp)/samsscal)
 < mod_cont("scaltarg")),1))
 /SUM((sacn,sacnp)\$SAM(sacn,sacnp), 1)) <
mod_cont("scalprop") ,

* samsscal is increased in multiples of 10 until the condition
is satisfied
 samsscal = samsscal * 10 ;
);

* Scale the SAM data for algorithm performance
SAM(sac,sacp) = SAM(sac,sacp)/**samsscal** ;



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Factor Use Data Entry

*---- 3b. Entering and Scaling of FACTUSE

* Remove factuse where there is no corresponding SAM payment
factuse(f,a)\$ (not sam(f,a)) = 0 ;

* Declare factuse from SAM if necessary

```
factuse(f,a)$((NOT factuse(f,a)) AND sam(f,a)) = sam(f,a) ;
```

* Default set factor scaling factor equal to SAM scaling factor

```
factscal          = samsscal ;
```

```
FACTUSE(f,a)     = FACTUSE(f,a)/factscal ;
```



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Population Data Entry

* Default set population scaling equal to SAM scaling factor

$$\text{popn}(h, \text{ppn}) \$\text{samsca1} = \text{popn}(h, \text{ppn}) / \text{samsca1} ;$$

Population data are used in the analyses files for providing extra information about the results from simulations



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Other Set Assignments

*##### 5. OTHER SET ASSIGNMENTS #####

*---- 5a. Assign set members for unskilled labour by exclusion

$$\text{lu}(1) = (\text{NOT } \text{ls}(1)) \text{ AND } (\text{NOT } \text{lm}(1));$$


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Other Set Assignments

**---- 5b. Defining sets to control production nesting structure*

\$ontext
The set aqxn(a) - activities with Leontief at the top level is set as the complement to aqx(a,r)

Selecting aqx

a) All activities WITH intermediate inputs where intermediates account for more than the value share set in Excel worksheet 'controls' are assigned to aqx.

b) Selected members of a in aqx are cancelled - use the set aleon.

c) Other members of a in aqx are cancelled manually.

Setting aqxn - Defined as the complement to aqx.

\$offtext

** Top level CES chosen by reference to intermediate input shares*
aqx(a)\$((SUM(c,SAM(c,a))/SAM("total",a)) GT mod_cont("minaqxsh")) = YES ;

** Top level CES cancelled for selected activities*
aqx(aleon) = NO ;

** Top level CES cancelled for selected activities manually*
aqx("amines") = NO ;

** Top level Leontief set for all activities without top level CES*
aqxn(a) = not aqx(a) ;



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Other Set Assignments

**---- 5c. Defining sets to control aggregation commodities*

** Linear aggregation of homogenous commodities*

cxac(c) = YES ;

cxac(cagr) = NO ;

cxacn(c) = not cxac(c) ;



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Other Elasticities

```
##### 6. OTHER ELASTICITY ASSIGNMENTS #####
```

\$ontext
NB: If the values for elasticities of substitution and/or transformation are set here they *OVERRIDE* the values set in the Excel database.

\$offtext

*---- 6a. Defining elasticities for export demand

*Syntax example
* **elastc("cmines", "exdem") = 0.5 ;**



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Diagnostics



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Diagnostics: Illegal Sub Matrix Entries

PARAMETERS

```

* Macro SAM for checking calibration and initial solve
ASAM0(ss,ss)  Aggregate SAM for data entry check      ;
* Macro SAM to check data entry
ASAM0("COMMDTY","COMMDTY")  = SUM((c,cp),SAM(c,cp)) ;
..
..
..
..
..
..
ABORT $(ASAM0("COMMDTY","COMMDTY") NE 0.0)
"ASAM0(COMMDTY,COMMDTY) non zero" ;
    
```



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Diagnostics: Illegal SAM Entries

```

Parameter
INTDnegCNT      Count of negative intermediate input demand
CDnegCNT        Count of negative household demand
;
..
..
..
INTDnegCNT      = SUM((c,a)$ (SAM(c,a) LT 0.0), 1) ;
CDnegCNT        = SUM((c,h)$ (SAM(c,h) LT 0.0), 1) ;
..
..
..
IF(INTDnegCNT NE 0.0,
  Display "negative intermediate input demand" ; ) ;

IF(CDnegCNT NE 0.0,
  Display "negative household demand" ; ) ;
    
```



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STAGE_t Model Checks



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Model Checks

- Check that **VAR WALRAS** is equal to **0**.
- Check that all the **LHS** (left hand sides) are correct
 - search for LHS and then search (from cursor) for ******* (which indicates a problem).
- For additional certainty search for **infes**.
- Model will abort when certain checks fail



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Check Initialisation – ASAM1, SAM1

- Check the **initial** values of the variables and parameters are ‘correct’
 - Model will abort when **ASAM1** and **SAM1** checks fail
 - Reports will/should help user find the cause
- **Aggregated SAM – ASAM1**
 - **CHECK1** - all values should equal **0**
 - **ASAM1CHK** - all values should equal **1.000**
 - **DIFFASAM1** - all values should equal **0**
 - **CNTASAM1** - all values should equal **0**
- **Micro SAM – SAM1**
 - **SAM1CHK** - all values should equal **1.000**
 - **DIFFSAM1** - all values should equal **0**
 - **CNTSAM1** - all values should equal **0**
- Use ref file to understand these checks



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Check Replication – ASAM2, SAM2

- Check the **solution** values of the variables and parameters are ‘correct’
 - Model will abort when **ASAM2** and **SAM2** checks fail
 - Reports will/should help user find the cause
- **Aggregated SAM – ASAM2**
 - **CHECK2** - all values should equal **0**
 - **ASAM2CHK** - all values should equal **1.000**
 - **DIFFASAM2** - all values should equal **0**
 - **CNTASAM2** - all values should equal **0**
- **Micro SAM – SAM2**
 - **SAM2CHK** - all values should equal **1**
 - **DIFFSAM2** - all values should equal **0**
 - **CNTSAM2** - all values should equal **0**
- Use ref file to understand these checks



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Numéraire Check

Data entry file

```
* lbi. Loading a SAM from Excel via GDY
$GDYIN data_in.gdy
...
* Control data
$LOADdc flow_cont mod_cont
...
$GDYIN
```

Closure file

```
WF.LO(f)$UEF(f) = WF0(f) * mod_cont("numerchk") ;
* To use CPI as the numeraire fix CPI
CPI.FX = CPI0 * mod_cont("numerchk") ;
* To fix the real exchange rate fix ER and PPI
* PPI.FX = PPI0 * mod_cont("numerchk") ;
TEXADJ.FX = TEXADJ0 * mod_cont("numerchk") ;
```

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Numéraire Check

- Check the model is homogenous degree zero
 - in the ‘controls’ worksheet - change cell **B8** to **2**.
 - doubling the numéraire; what should this do?
- Rerun the program
 - find **ASAM2CHK**;
 - What should the values be?
 - What are its values?
 - Also look at
 - **DIFFASAM2, CNTASAM2, CHECK2**
- Use ref file to understand these checks

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Other Checks

- Run a simple experiment
 - Check the results make sense
- Logic
 - Just because the model passes these checks does not mean it is right
 - Check the results are logically consistent



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The End



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